

Hinge Pin Remover Tool

BACKGROUND OF THE INVENTION

1. Technical Field

[01.00] This invention relates generally to hand tools, and more particularly to a hand tool for removing a hinge pin from a door hinge or other hinge.

2. Description of Related Art

[02.00] A typical door hinge includes a first hinge section that mounts on a door and a second hinge section that mounts on a vertically disposed framing member at the door opening. The task of mounting a door on the framing member with multiple hinges proceeds by mounting the first and second hinge sections of each hinge on the framing member and the door. Next, the installer positions the door by the door opening and aligns the two hinge sections of each hinge. Then, the installer inserts removable hinge pins in the hinges that function to hold the two sections of the hinges together pivotally. The above applies to various types and kinds of hinges other than just door hinges.

1 [03.00] Removing the door proceeds in reverse order by first
removing the hinge pins. That is where certain problems can
arise. Over time, the hinge pin shaft often becomes tightly
lodged in place, through corrosion or otherwise, making
5 removal very difficult. Existing methods of dislodging such a
hinge pin include placing a screwdriver blade under the head
of the hinge pin and tapping the screwdriver handle with a
hammer or the heel of the hand. But that does not always
work very well and it can result in objectionable scratches to
10 the hinge pin and elsewhere on the hinge. Thus, a need exists
for a better way to remove such a hinge pin.

SUMMARY OF THE INVENTION

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[04.00] This invention addresses the concerns outlined above
by providing a dedicated hinge pin remover tool having a
forked tip that fits under the hinge pin head. The user wedges
the forked tip between the hinge pin head and the rest of the
20 hinge and then dislodges the hinge pin with a prying action of
the forked tip against the hinge pin head.

[05.00] To paraphrase some of the more precise language
appearing in the claims and further introduce the nomenclature
25 used, the invention provides a tool for removing a hinge pin

1 from a hinge when the hinge pin includes a hinge pin shaft with
a predetermined hinge pin shaft diameter (e.g., 9/32 of an inch)
and a hinge pin head with a predetermined hinge pin head
diameter (e.g., 1/2 of an inch) that is larger than the hinge
5 pin shaft diameter. The tool includes an elongated
member (e.g., a shaft) having a proximal end portion and a
distal end portion, a handle on the proximal end portion of the
elongated member for a user to grasp in a hand of the
user, and a forked tip (i.e., bifurcated) on the distal end portion
10 of the elongated member for the user to wedge between the
hinge pin head and the hinge for purposes of facilitating hinge
removal.

[06.00] The forked tip includes spaced apart first and second
15 hinge-pin-dislodging tongs. The tongs define a channel having
a width between the first and second tongs that is larger than
the hinge pin shaft diameter and smaller than the hinge pin
head diameter. That enables the channel to receive the hinge
pin shaft as the user wedges the first and second
20 hinge-pin-dislodging tongs between the hinge pin head and the
hinge.

[07.00] In one preferred embodiment, the first and second
hinge-pin-dislodging tongs are beveled inwardly toward each
25 other to better enable the user to wedge the first and second

1 tongs between the hinge pin head and the rest of the hinge. In
addition, the elongated member is composed of metal, the
channel has a uniform cross section, and the channel has a
width slightly greater than 9/32 of an inch wide in order to
5 accommodate a 9/32-inch diameter hinge pin shaft.

[08.00] Thus, the invention provides a dedicated hinge pin
remover tool that facilitates the removal of a hinge pin. The
following illustrative drawings and detailed description make
10 the foregoing and other objects, features, and advantages of
the invention more apparent.

BRIEF DESCRIPTION OF THE DRAWINGS

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[09.00] FIG. 1 of the drawings is an isometric view showing
the top, front, and right side of a hinge pin remover tool
constructed according to the invention;

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[10.00] FIG. 2 is a top plan view of the hinge pin remover tool;

[11.00] FIG. 3 is a side elevation view of the right side of
the tool;

1 [12.00] FIG. 4 is a perspective view showing the tool in use
to remove the hinge pin of a door hinge;

[13.00] FIG. 5 is an enlarged isometric view of a tip portion
5 of the tool;

[14.00] FIG. 6a is a cross-sectional elevation view of the
tip portion as viewed in a plane containing a line 6-6 in FIG. 5;

10 [15.00] FIG. 6b is a diagrammatic representation of the
uniform trapezoidal cross section of the channel shown in
FIG. 6a between the first and second hinge-pin-dislodging
tongs;

15 [16.00] FIG. 7 is a cross-sectional elevation view of the tip
portion as viewed in a plane containing a line 7-7 in
FIG. 5; and

[17.00] FIG. 8 is a top plan view similar to FIG. 2 of a portion
20 of a second embodiment of a hinge pin remover tool
constructed according to the invention that has a differently
beveled tip portion that defines a distally enlarged channel.

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DESCRIPTION OF THE PREFERRED EMBODIMENTS

5 [18.00] FIGS. 1-7 of the drawings show various aspects of a hinge pin remover tool **10** constructed according to the invention. It facilitates removal of a hinge pin **11** from a hinge **12** having first and second hinge sections **13** and **14** as shown in FIG. 4. The hinge pin **11** (typically made of steel) includes a hinge pin shaft **15** with a predetermined hinge pin shaft diameter (e.g., 9/32 of an inch) and a hinge pin head **16**
10 with a predetermined hinge pin head diameter (e.g., 1/2 of an inch) that is larger than the hinge pin shaft diameter.

15 [19.00] Generally, the tool **10** includes an elongated member in the form of a blade **17** having a proximal end portion **18** and a distal end portion **19** identified in FIGS. 1-3. The blade **17** may be composed of quarter-inch thick steel, for example, similar to the blade of a typical screwdriver or chisel. The tool **10** also includes a handle **14** (FIGS. 1-4) that is attached
20 to the proximal end portion **18** of the blade **17** for a user to grasp in a hand **20** of the user (FIG. 4). In addition, the tool **10** includes a forked tip **21** on the distal end portion **19** of the blade **17** for the user to wedge between the hinge pin head **16**

1 and the rest of the hinge **12** for purposes of facilitating hinge
pin removal.

[20.00] For the tool **10**, the handle **14** and the blade **17**,
5 including the forked tip **21** of the blade **17**, extend along a
central axis of elongation **22** (FIG. 1) for a total length of the
tool **10** that measures about seven inches. Of course, that
dimension may vary significantly without departing from the
inventive concepts described.

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[21.00] The forked tip **21** includes an upper side **23** and an
under side **24** that are identified in FIG. 3. It is referred to as
a "forked tip" because it resembles a fork in that it is
divided into two or more branches or prongs (i.e., bifurcated).
15 Thus, the forked tip **21** includes spaced apart first and
second hinge-pin-dislodging prongs **25** and **26** that define a
hinge-pin-shaft-receiving channel **27** extending along the
central axis of elongation **22**. The first and second prongs **25**
and **26** are referred to as "hinge-pin-dislodging prongs"
20 because they function to dislodge the hinge pin **11** from the rest
of a hinge **12**. Unlike the prongs of a common dinner fork and
the like, the first and second prongs **25** and **26** are sufficiently
large in cross sectional size so that they are rigid enough to
not spread significantly when forced under the hinge pin

1 head **16** (i.e., the width of the channel **27** does not increase appreciably in use).

[22.00] The channel **27** that the first and second prongs **25**
5 and **26** form has a uniform width between the first and second prongs **25** and **26** at the under side **24** that measures about 5/8 of an inch so that it is slightly greater than the predetermined hinge pin shaft diameter of the hinge pin shaft **15**. The width of the channel **27** is indicated in FIG. 2 at
10 reference numeral **28** between two opposing arrowheads in that view. With the width of the channel **27** slightly greater than the diameter of the hinge pin shaft **15**, the channel **27** can receive the hinge pin shaft **15** as the forked tip **21** is wedged between the hinge pin head **16** and the rest of the hinge **11** as shown
15 in FIG. 4. Based upon the foregoing and subsequent descriptions, one of ordinary skill in the art can readily implement the invention, including providing a different channel width in order to accommodate a hinge pin shaft having a different diameter than the 9/16 of an inch diameter of the
20 hinge pin shaft **15**. Different channel widths are intended to fall within the scope of the claims.

[23.00] In order to facilitate use of the tool **10**, the first and second prongs are preferably beveled. The first and second

1 prongs **25** and **26** include first and second beveled surfaces **29**
and **30** (FIGS. **5** and **6a**) that extend to first and second
edges **31** and **32** at the under side **24** so that the width of the
channel **27** at the upper side **23** is greater than the width of the
5 channel **27** at the under side **24**. Fig. **6b** is a diagrammatic
representation **33** of the trapezoidal cross section of the
channel **27** that results.

[24.00] The trapezoidal cross section facilitates use of the
10 tool **10** because the first and second beveled surfaces **29**
and **30** wedge more easily between the hinge pin head **16** and
the rest of the hinge **12** as the user advances the edges **31**
and **32** under the hinge pin head **16**. The illustrated forked
tip **21** is also further beveled to result in a third beveled
15 surface **34** that extends to a third edge **35** at the under
side **24** (FIGS. **6a** and **7**). As the user continues to advance
the forked tip **21** beneath the hinge pin head **16**, the third
beveled surface **34** eventually wedges between the hinge pin
head **16** and the rest of the hinge **12** as the edge **35** moves
20 beneath the hinge pin head **16**.

[25.00] Turning now to FIG. **8**, it shows a second embodiment
of a hinge pin remover tool constructed according to the
invention that is identified as a tool **100**. The tool **100** is

1 similar in many respects to the tool **10** and so only differences
are described in further detail. For convenience, reference
numerals designating parts of the tool **100** are increased by
one hundred over the reference numerals designating similar,
5 related, or corresponding parts of the tool **10**.

[26.00] Similar to the tool **10**, the tool **100** includes a blade **117**
having a distal end portion **119** and a forked tip **121** on the
distal end portion **119**. The forked tip **121** includes first and
10 second hinge-pin-dislodging prongs **125** and **126** that define a
hinge-pin-shaft-receiving channel **127** bounded by first, second,
and third beveled surfaces **129**, **130**, and **134** that extend to
first, second, and third edges **131**, **132**, and **135**.

15 [27.00] The major difference embodied in the tool **100** is that
the channel **127** has a width between the first and second
edges **131** and **132** that increases distally. In other words, the
width of the channel **127** is larger along the channel **127** further
away from the third edge **135** (i.e., between the fourth and fifth
20 edges **142** and **143**) than the width is closer to the third
edge **135** (i.e., between the first and second edges **131**
and **132**). That configuration results from fourth and fifth
beveled edges **140** and **141** that extend to fourth and fifth
edges **142** and **143**. As the user advances the forked tip **121**

1 toward the hinge pin **12**, the fourth and fifth edges **142** and **143**
advance beneath the hinge pin head **16** and thereby enable the
fourth and fifth beveled surfaces **140** and **141** to wedge
between the hinge pin head **16** and the rest of the hinge **12**.

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[28.00] Thus, the invention provides a dedicated hinge pin
remover tool having a forked tip that facilitates hinge pin
removal. The user wedges the forked tip between the hinge pin
head and the rest of the hinge and then dislodges the hinge pin
10 with a prying action of the forked tip against the hinge pin
head. Although exemplary embodiments have been shown and
described, one of ordinary skill in the art may make many
changes, modifications, and substitutions without necessarily
departing from the spirit and scope of the invention.

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[29.00] What is claimed is: